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(11)

**EP 1 402 803 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**31.03.2004 Bulletin 2004/14**

(51) Int Cl.7: **A47J 31/06, A47J 31/057**

(21) Application number: **03255258.0**

(22) Date of filing: **22.08.2003**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
HU IE IT LI LU MC NL PT RO SE SI SK TR**  
Designated Extension States:  
**AL LT LV MK**

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(30) Priority: **27.09.2002 US 256732**

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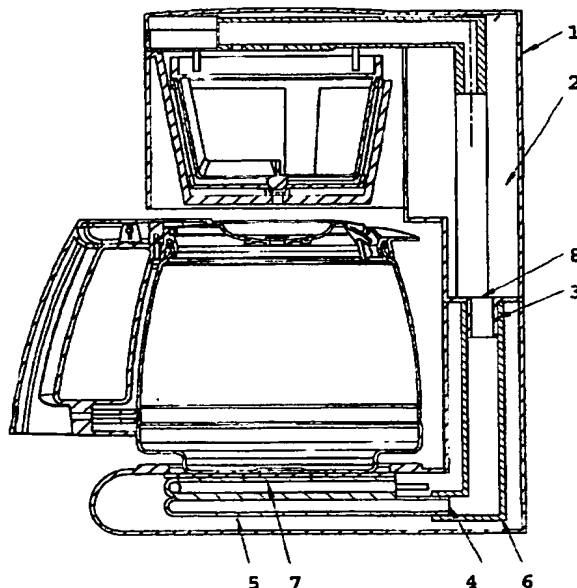
Remarks:

The application is published incomplete as filed  
(Article 93 (2) EPC).

(54) **Coffee maker**

(57) A coffee maker includes a water reservoir, an in-line water heater, a brew basket for receiving coffee grinds, and a water passage between the reservoir and the brew basket. The water passage passes through the

in-line water heater for delivering heated water to the brew basket. A rotating paddle is removably disposed in the brew basket to stir coffee grinds in the basket while heater water is supplied to the brew basket.



**FIGURE 1**

## Description

**[0001]** The invention relates to coffee makers, and in particular to drip-type coffee makers.

**[0002]** One method of making coffee includes passing heated water through coffee grinds in order to infuse the water with coffee flavour and aroma. A common type of coffee maker that employs this method is the so-called "drip-type" coffee maker.

**[0003]** In order to make a good cup of coffee, the water temperature should be substantially high enough throughout the whole brewing cycle, and the heated water should also evenly wet the grinds so that no over-extraction or under-extraction occurs which effects the quality of the brewed coffee.

**[0004]** Known Drip-type coffee makers comprise a water reservoir and a brew basket for receiving coffee grinds. A delivery tube or other water passage takes water from the water reservoir, through an in-line water heater and delivers it to a spreader above coffee grinds in the brew basket. The heated water passes through the coffee grinds and into a carafe.

**[0005]** The spreader is designed to distribute the heated water evenly over the coffee grinds, however the outflow of heated water from the holes in the spreader is just randomly dispersed, and in most case the heated water generally flows through the center portion of the brew basket. There is typically less wetting of the coffee grinds at the outer edges of the brew basket.

**[0006]** In addition, the turbulence created by the outflow of heated water from the spreader is not strong enough to mix the wetted coffee grinds. The wetted grinds become closely packed together which hinders the infusion through the wetted grinds. This results in uneven extraction of the coffee grinds and has an adverse effect on the quality of the coffee beverage.

**[0007]** It is an object of the present invention to overcome or ameliorate the above problems, or at least to provide the public with a useful alternative.

**[0008]** According to the invention there is provided a coffee maker including: a water reservoir, an in-line water heater, a brew basket for receiving coffee grinds, a water passage between the reservoir and the brew basket, the passage passing through the in-line water heater for delivering heated water to the brew basket, characterised by a paddle removably disposed in the brew basket, and a drive for rotating the paddle while heated water is delivered to the brew basket.

**[0009]** Preferably, the brew basket has a recess in its base for locating the paddle, and the paddle comprises:

- a boss for locating within the recess of the brew basket,
- first and second horizontal blades extending diametrically from the boss,
- a first vertical blade extending upwardly from the first horizontal blade,
- a second vertical blade extending upwardly from

the second horizontal blade, and  
a drive ring connecting the first and second vertical blades, the drive ring releasably engaging the drive for rotating the paddle.

**[0010]** Preferably, the drive is a motor having a toothed gear on an output shaft, the drive ring having a plurality of teeth about its outer periphery for engaging the toothed gear.

**[0011]** Preferably, the drive ring includes a guide lip for slidably bearing against the brew basket to rotatably support the paddle.

**[0012]** Preferably, a filter element is located between the brew basket and the paddle.

**[0013]** Further aspects of the invention will become apparent from the following description, which is given by way of example only.

**[0014]** Embodiments of the invention will now be described by way of example only and with reference to the accompanying drawings in which:

Figure 1 illustrates a first sectional view through a drip-type coffee maker according to the invention,

Figure 2 illustrates a second sectional view through the drip-type coffee maker,

Figures 3 to 6 illustrate a stirring paddle,

Figure 7 illustrates a sectional view of the paddle and driving means, and

Figure 8 illustrates a top view of the paddle, brew basket and driving means.

**[0015]** Referring to Figure 1, a coffee maker comprises an enclosure 1 with an integral reservoir 2 for storing water. An outlet 3 from the reservoir 2 is connected to an inlet 4 of a metal tube 5 by a silicone rubber tube 6. An inline water heater 7 is integrated with metal tube 5. The water in the reservoir will flow into the metal tube 5 through the opening 8 of the outlet 3.

**[0016]** Referring to figure 2, an outlet 9 of the metal tube 5 is connected to inlet 10 of a riser tube 12 by a silicone rubber tube. The inlet 11 of a spreader 13 connects to the riser tube outlet 12.

**[0017]** When the unit is switched on (to begin a brew cycle) water inside the metal tube 5 is heated by heater 7. The temperature of the water rises and steam pressure is generated. When the pressure accumulated inside the metal tube 5 is greater than the atmospheric pressure. The heated water is forced up the riser tube 12 to the spreader 13. The spreader 13 has apertures 14 at its bottom. Heated water will flow through apertures 14 of the spreader 13. Arrangements similar to the above are well known in the art.

**[0018]** A brew basket is disposed under the spreader 13. The brew basket comprises a metal or plastic mesh

filter 16 located inside an open top vessel 15. The filter 16 has ribs 17 at its base. These ribs 17 prevent the filter 16 being rotated inside the vessel 15. There is a recess or bore 19 in the base of the filter 16 and brew basket. A paddle 18 is located within the brew basket for stirring the coffee grounds while water is discharge from apertures 14 of spreader 13.

[0019] Figures 3 to 6 illustrate paddle 18 in detail. The paddle comprises a boss 21 for locating within the recess 19 of the brew basket. First and second horizontal blades 26, 27 extend diametrically from the boss 21. The blades are arranged at an angle so that, in use, they slidably engage the base of the filter 16 of brew basket. First and second vertical blades 28, 29 extend upwardly from the distal ends of first and second horizontal blades 26, 27 respectively. The first and second vertical blades 28, 29 are adapted to, in use, slidably engage the inside walls of the filter 16. A drive ring 20 is located concentric to boss 21 and connects the upper ends of first and second vertically blades 28, 29 at their top ends. The outer periphery of drive ring 20 has a plurality of teeth in a gear arrangement.

[0020] The paddle 18 rotatably locates within the brew basket by location of boss 21 within recess 19 at the bottom of the brew basket. A guide on the underside 30 of ring 20 slidably locate against the top rim of the brew basket to rotatably support the top of the paddle 18.

[0021] Referring to figures 7 and 8, a motor 23 is located at the side of the brew basket 15. The output shaft of the motor 23 is mounted with a driving gear 24 which a toothed periphery 25 matching ring 20. The toothed gear 24 engages the periphery teeth of drive ring 20. During the brewing cycle the driving gear 24 will drive the paddle 18 to make it rotate inside the brew basket 15. The rotating paddle 18 will mix the coffee grinds with the heated water by keeping the coffee grounds in running stage. This results in even wetting of all coffee grounds.

[0022] Where in the foregoing description reference has been made to integers or elements having known equivalents then such are included as if individually set forth herein.

[0023] Embodiments of the invention have been described, however it is understood that variations, improvements or modifications can take place without departure from the spirit of the invention or scope of the appended claims.

## Claims

### 1. A coffee maker including:

a water reservoir,  
an in-line water heater,  
a brew basket for receiving coffee grinds,  
a water passage between the reservoir and the brew basket, the passage passing through the

in-line water heater for delivering heated water to the brew basket, characterised by a paddle removably disposed in the brew basket, and a drive for rotating the paddle while heated water is delivered to the brew basket.

2. The coffee maker of claim 1 wherein the brew basket has a recess in its base for locating the paddle, and the paddle comprises:

a boss for locating within the recess of the brew basket,  
first and second horizontal blades extending diametrically from the boss,  
a first vertical blade extending upwardly from the first horizontal blade,  
a second vertical blade extending upwardly from the second horizontal blade, and  
a drive ring connecting the first and second vertical blades, the drive ring releasably engaging the drive for rotating the paddle.

4. The coffee maker of any preceding claim wherein the drive is a motor having a toothed gear on an output shaft, the drive ring having a plurality of teeth about its outer periphery for engaging the toothed gear.

5. The coffee maker of any preceding claim wherein the drive ring includes a guide lip for slidably bearing against the brew basket to rotatably support the paddle.

6. The coffee maker of any preceding claim wherein a filter element is located between the brew basket and the paddle.

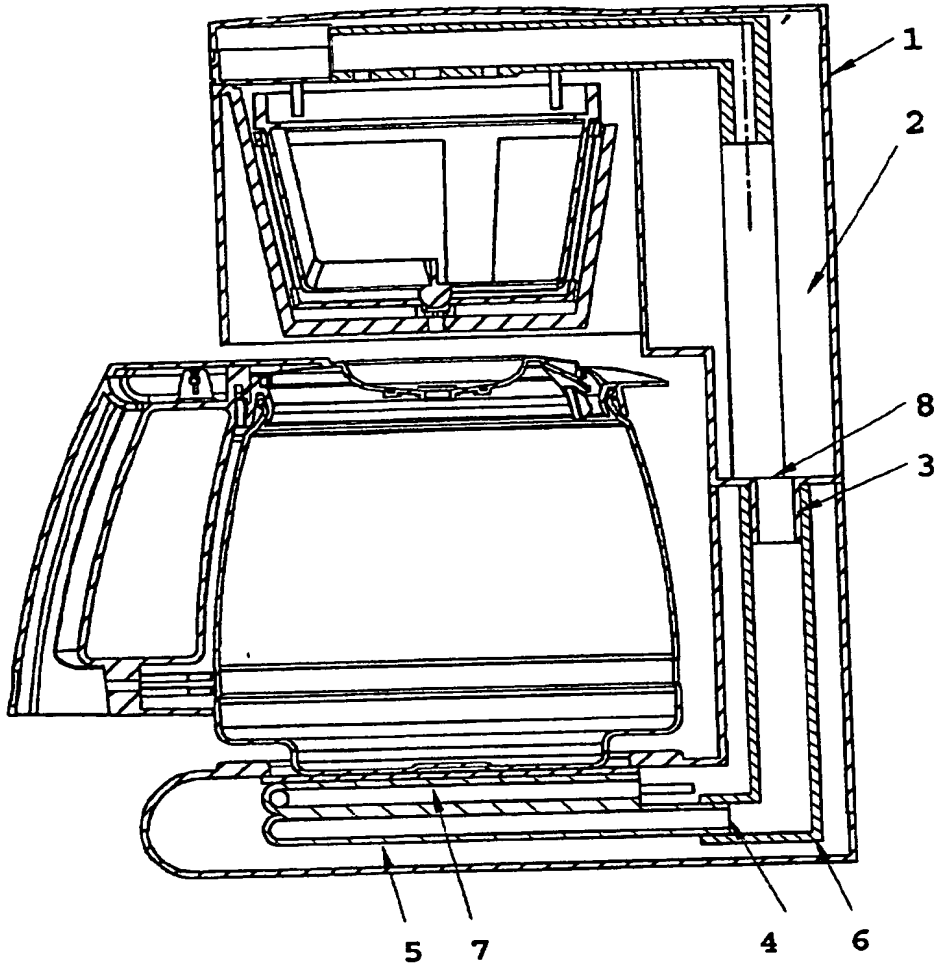


FIGURE 1

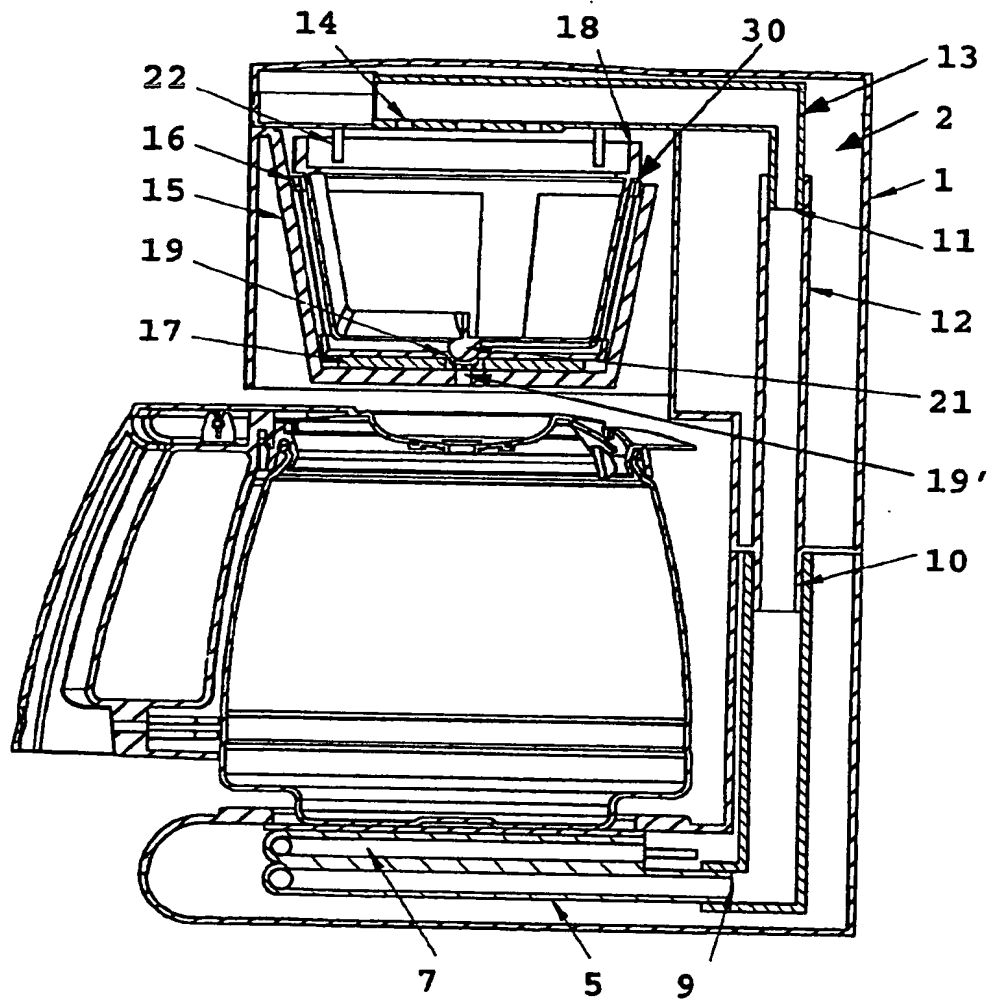


FIGURE 2

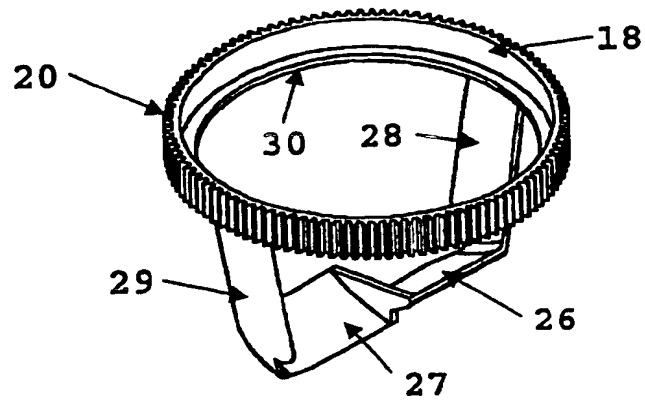


FIGURE 3

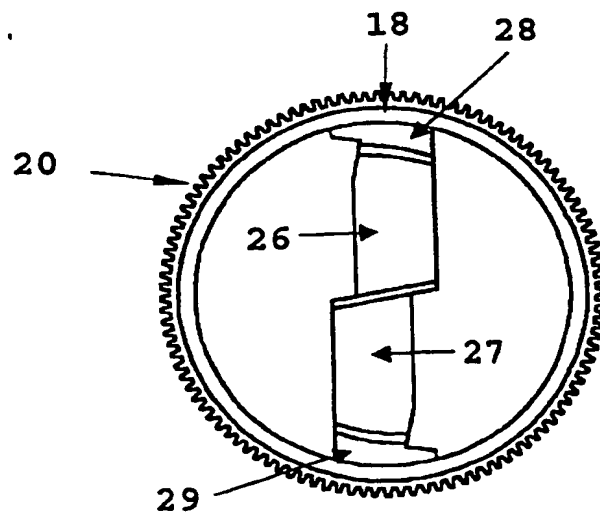


FIGURE 4

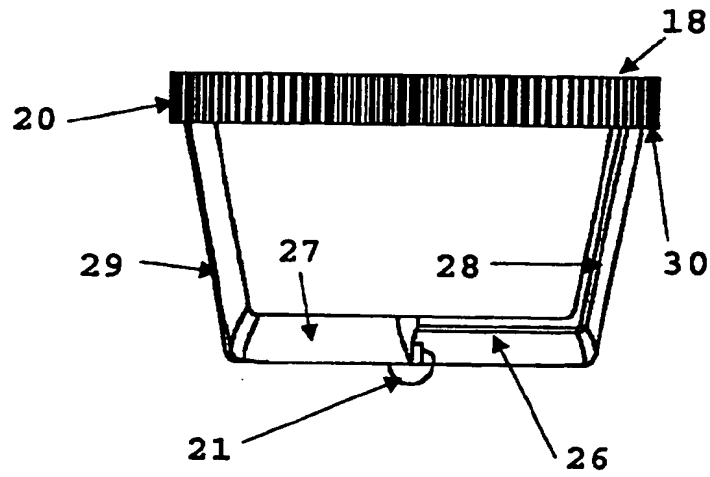


FIGURE 5

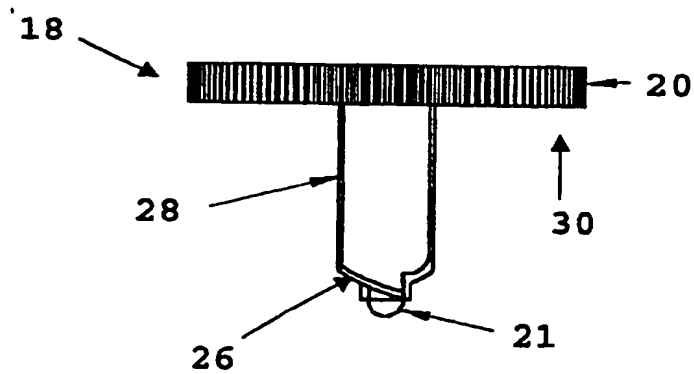
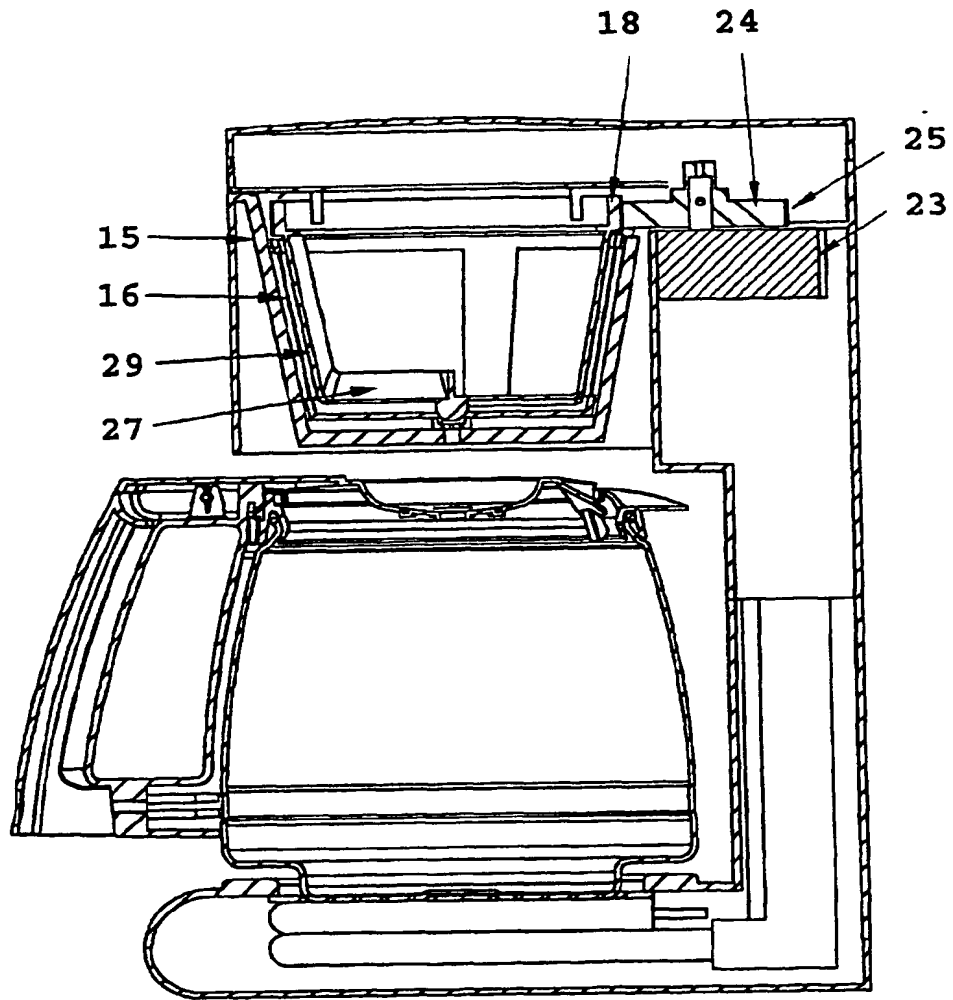


FIGURE 6



**FIGURE 7**





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Application Number  
EP 03 25 5258

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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X	EP 0 278 197 A (CHARBONNAGES DE FRANCE) 17 August 1988 (1988-08-17) * column 4, line 42 - column 9, line 32; figures 5-12 *	1,4,6	
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X	US 6 324 964 B1 (IMFELD ERNST ET AL) 4 December 2001 (2001-12-04) * figures 3,4 *	1,4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 26 November 2003	Examiner Fritsch, K
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EPO FORM 1503 03 82 (P04-C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 03 25 5258

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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26-11-2003

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